REMARKS

Claims 1-27 are pending. Claims 1-27 are rejected.

In the Office Action, the Examiner rejected claims 1-5, 11-15, 19-22, 25, and 26 pursuant to 35 U.S.C. §102(b) as being anticipated by Salmon et al. (U.S. Patent No. 5,503,155). Claim 6 was rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Salmon et al. further in view of Bernstein et al. (U.S. Patent No. 5,163,421). Claims 7, 8, 16, and 23 were rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Salmon et al. further in view of Lemelson (U.S. Patent No. 5,845,646) and Ben-Haim (U.S. Patent No. 6,083,170). Claims 9, 10, 17, 18, and 24 were rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Salmon et al. further in view of Flesch (U.S. Patent No. 5,681,263) and Ben-Haim. Applicants respectfully request reconsideration of claims 1-27, including independent claims 1, 11 and 19.

Claim 27 was added in a previous amendment. The cover sheet of the Office Action acknowledges 27 total claims, but a rejection has not been provided for claim 27.

In a telephone interview on November 17, 2004 between Examiner Jung and Craig Summerfield, all of the independent claims were discussed in light of the prior art relied on for the rejections. The use of the device of Salmon et al. was discussed. Salmon et al. specifically desire to allow for flexibility and bending while in the patient. Because Salmon et al. is for use in catheters with steering wires or guides, Salmon et al. does not disclose an adaptable section operable to maintain the position of the handle section relative to the transducer section without steering wires or during use within a patient. Salmon et al. disclose a flexible device operable to be maintained in a position, such as by steering wires, not a device with an adaptable section operable to do the maintaining. The Examiner agreed that all three independent claims were allowable and was going to consult a supervisor in order to allow the case.

The Examiner later called Craig Summerfield and indicated that he could not currently enter an Office Action due to file processing at the PTO. Accordingly, the Examiner requested that this Response be filed.

Independent claim 1 claims an adaptable section operable to maintain the position of the handle section relative to the transducer section without steering wires. Salmon et al. do not disclose these limitations.

Salmon et al. disclose a mere part (drive cable) intended for use with other structure (col. 1, lines 7-10; col. 3, lines 28-34 and col. 6, lines 7-16). Taken alone, the drive cable is flexible (col. 4, lines 6-45). The drive cable includes two coils of stainless steel to provide high torsional modulus of elasticity while maintaining the flexible nature of the drive cable (col. 4, lines 46-49 and 61-65). Stainless steel wire is a poor candidate for a material operable to maintain a position of the handle relative to the transducer not as a steering wire. Stainless steel has high yield points, work hardens when deformed and has relatively low resistance to low cycle fatigue cracking. The statements of flexibility also teach away from maintaining the relative positions of handle and transducer sections. The drive cable also includes a resilient support tube to help twisted pairs of wire recover from bending without kinks (col. 5, lines 35-39). The support tube tends to straighten out the wire pair after storage or passing through tortuous regions of a vessel (col. 5, lines 39-43). Tending to straighten shows that the drive cable does not maintain the relative positions of the handle and transducer sections. The flexible drive cable is not operable to maintain the position of the handle section relative to the transducer section without steering wires. The drive cable as taught by Salmon et al. by itself provides a flexible device with no mechanism for maintaining a position. The drive cable is not operable to maintain the position of the handle section relative to the transducer section without steering wires.

When the drive cable is used as intended with the rest of the catheter, steering wires are provided. Salmon et al. specifically refer to use in devices disclosed in four different patents (col. 6, lines 7-16). U.S. Patent Nos. 5,000,185 and 4,794,931 use a guide wire 36 for steering. U.S. Patent No. 5,243,988 uses a guide catheter or the guide wire (see col. 28 of the '988 patent). U.S. Patent No. 5,203,338 uses a guide wire (see col. 4 of the '338 patent). Salmon et al. disclose a drive cable used for a rotational transducer within a catheter. When used in the suggested catheters, the references relied on by Salmon et al. disclose using steering wires. Salmon et al. do not suggest a memory-less adaptable section operable to maintain the position of the handle section relative to the transducer section without steering wires.

Independent claim 11 claims an adjustable section having a device to maintain an adjusted bent position without a device for adjusting the adjustable section during use within the patient. As discussed above, Salmon et al. teach a flexible drive cable without structure to maintain a bent position and suggest use of the drive cable in a catheter with a guide wire. Salmon et al. do not suggest an adjustable section device to maintain a bent position without a device for adjustment during use within the patient.

Claim 19 claims rotating a first axis of a transducer housing relative to second axis of a handle housing prior to inserting the probe into a cavity of a patient and maintaining a relative position while the transducer housing is within the cavity. As discussed above, the drive cable of Salmon et al. is flexible and tends to an straight position, so does not maintain a relative position after rotation. Because the drive cable is intended for use in catheters with guide wires, the rotating to maintain the relative position is done while inserted within the patient and in response to guide wires.

Dependent claims 2-5, 12-15, 20-22, and 25-27 depend from the independent claims 1, 11 and 19 discussed above. Accordingly, these dependent claims are allowable for at least the reasons discussed above for the independent claims. Further limitations of the dependent claims distinguish these claims from Salmon et al. For example, Salmon et al. do not disclose: the adaptable section operable to maintain a plurality of positions as claimed in claims 3 and 13 (the drive cable tends towards one straight position unless otherwise constrained); the adaptable section comprising a memoryless bendable section as claimed in claims 4 and 14 (the drive cable tends to extend towards one straight position); increasing the malleability in response to external force as claimed in claims 25 and 26; maintaining the spatial orientation of the transducer section to the handle section free of change during use in the cavity as claimed in claim 27 (the drive cable changes to many different orientations while being guided by the guide wire within the patient).

Dependent claim 6 depends from the independent claim 1 discussed above, and thus allowable for at least the reasons discussed above for independent claim 1. Claim 6 is also allowable because a person of ordinary skill in the art would not have been motivated to use the aluminum tip of Bernstein with the drive cable of Salmon et al. Bernstein uses therapeutic ultrasound transmitted from the tip of the device for angioplasty (col. 2, lines 6-15 and col. 2, lines 24-40). Aluminum alloys are used on the extreme tip due to good acoustic energy transmission qualities for application of the therapeutic ultrasound (col. 2, lines 29-55 and col. 6, lines 1-56). Salmon et al. rely on coils of metal wire such as stainless steel for specific torsional properties (col. 4, lines 46-65). There is no suggestion that aluminum alloys would perform well for torsional modulus with flexibility. Furthermore, in use in a catheter, the guide wires are used for controlling the curvature between a handle and transducer to position the transducer. A person of ordinary skill in the art would not have used the aluminum tip of Bernstein as part of the much different drive cable or catheter with the drive cable. The acoustic transmission properties of the drive cable and steering portion between the handle and transducer do not matter for the probes of Salmon et al. Furthermore, the Examiner relies on the motivation from both references to provide a flexible catheter, yet claims 1 and 6 claim maintaining the position of the handle to the transducer. A person of ordinary skill in the art would not have combined these references to provide the invention of claims 1 and 6 and such combination would be inoperable.

Dependent claims 7, 8, 16 and 23 depend from the independent claims 1, 11 and 19 discussed above, and are thus allowable for at least the reasons discussed above for the independent claims. These dependent claims are also allowable for another reason. A person of ordinary skill in the art would not have used the ball and socket joints of Lemelson with the teachings of Ben-Haim and Salmon et al. Lemelson teaches away from using the ball and socket joints for small spaces, such as catheters. Steering wires are connected with each ball and socket joint within the catheter (col. 13, lines 19-27). Lemelson notes that "steering systems of the foregoing types [including the ball and socket joints] require internal pull wires or other internal structures which occupy space within the lumen of the catheter. Desirably, however, the catheter diameter should be as small as possible to minimize insertion trauma and unwanted damage to surrounding tissue" (col. 13, lines 54-59). Lemelson provides an

alternative using magnets (col. 13, lines 60-64). Lemelson teaches away from using the ball and socket joints due to the size requirements, so a person of ordinary skill in the art would not have used the ball and socket joints of Lemelson with the catheter probe teachings of Ben-Haim. Likewise, Lemelson teaches away from using the angulation or guide wires, such as provided in the intended use of the drive cable of Salmon et al.

Dependent claims 9, 10, 17, 18 and 24 depend from the independent claims 1, 11 and 19 discussed above, and are allowable for at least the reasons discussed above for the independent claims. Claims 9, 10 and 17 claim the latch to be part of the adaptable section between the handle and the transducer. The ball latches 34 and indentations 36 of Flesch are part of the handle, not between the handle and transducer. A person of ordinary skill in the art would not have used a rotatable control using the ball latches 34 in the handle as part of the separate bending or steered section of Ben-Haim or Salmon et al.

CONCLUSION:

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call the undersigned at (650) 943-7350 or Craig Summerfield at (312) 321-4726.

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